

# MARINE REVIEW.

VOL. XI.

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No. 1.

## Management of the Barges—Iron Ore Matters.

The announcement that Pickands, Mather & Co., of Cleveland had been appointed operating agents for the American Steel Barge Company, to manage next season the entire fleet of twenty-seven whaleback vessels on the lakes, was made by the REVIEW, last week, in an authoritative way, and was not, on that account, accompanied by any reference to the comment from vessel owners or ore dealers on the subject, but of course a business arrangement involving the management of ships valued at about two and three-quarter millions is not allowed to pass without considerable speculation as to the outcome of it. The change is said to mean nothing more than a conclusion on the part of the barge company to the effect that with their special facilities for operating vessels in the ore and coal trade Pickands, Mather & Co. may be able to get more work out of the boats than would be secured under the method of operating them in the past. Capt. McDougall was looking after a ship building business in Superior, and in the maintenance of a branch office at Cleveland, where most of the business should be conducted, the management was disconnected.

The boats, it is understood, had not carried the amount of ore it was expected they would carry during the past season, largely on account of the ore companies with which they were engaged having little control of the docks, and Mr. Rockefeller is said to have expressed the opinion some time ago that the ship building business and the business of managing ships should be separate and distinct in every way. With the barges and two boats now building at South Chicago for the Minnesota Iron Company, there will be managed in the office of Pickands, Mather & Co., next season, no less than forty vessels, every one of which, with possibly one exception, will have a capacity of more than 2,000 tons and some of them double that amount. This includes, of course, all of the boats of the Minnesota company, the Kearsarge and the two Huron Barge Company boats, Pathfinder and Sagamore. No such aggregation of tonnage is controlled by any other single concern in this country. That the relations existing between the Cleveland firm and the mining and dock companies permits of the best possible facilities being afforded to vessels under their charge may be understood when it is known that one of the steamers of the Minnesota line made twenty-nine trips to Lake Superior during the past season. A few years ago ten trips to the head of the lakes was considered very good work.

In considering the matter of ore prices for next year, most of the ore dealers seem to attach some importance to the change in management of the barges. They are inclined to the opinion that the arrangement indicates an amicable feeling between the Minnesota Iron Company and the Rockefeller interests on the Mesabi range. Mr. Rockefeller is known to be a heavy stockholder in the Minnesota Iron Company, and if the two big interests in the mines of the two ranges in the state of Minnesota are to demand better prices for ore this year the news will be welcomed by everybody in the ore business. There are no indications of anything being done in the way of sales of ore for next season's delivery but the feeling that prices must be somewhat higher than they were a year ago still prevails.

## Trade Notes.

The Cramps are said to have placed an order with a firm in Dumbarton, Scotland, for thirty collapsible life-boats for the new American Line ships.

Crawley & Johnson of Cincinnati manufacturers of the "Cincinnati" steam steerer, inform us that T. M. Jenkins & Co., of Pittsburgh has placed an order with them for a steerer for the steamer Rosedale.

A steam steel yacht similar to the Eleanor, built recently by the Bath Iron Works of Bath, Me., will be constructed this winter by the same firm for R. H. White, a wealthy Boston merchant. The boat will be 151.4 feet over all, 22.6 feet beam and 11 feet mean draft. The engines will be triple expansion with cylinders 14, 21 and 34 inches diameter and 24 inches stroke. The horse power expected is about 700.

## New Officers Among Marine Engineers.

M. E. B. A. No. 2, Cleveland: President, John N. Kirby; vice-president, Silas H. Hunter; recording secretary, John Hayward; financial secretary, James Carr; corresponding secretary, J. F. Reilley; chaplain, Henry F. McAuley; conductor, Edwin Stoddard; in doorkeeper, Charles

Clark; out doorkeeper, William Most; trustees, M. B. Sturtevant, William Kennedy, sr., and James Carr. J. N. Kirby and John Hayward are delegates elected to attend the national convention, to be held in Washington, Jan. 20.

## Comparative Tests of Boilers.

Maudslay Sons & Field, the British manufacturers of Belleville boilers, are giving wide publicity to results of trials which were intended for the purpose of ascertaining the comparative evaporative efficiency between the ordinary cylindrical single-ended boiler and boilers of the Belleville type, and which they say had considerable influence in prompting the British admiralty to adopt the French boiler for two battle ships now under construction. According to reports made by the English firm, a vessel with cylindrical single-ended three furnace boilers was first selected. Two of these boilers worked in battery were used, the total grate surface being 138 square feet, and the total heating surface 3,380 square feet. A group of four Belleville boilers, having a total grate surface of 135 square feet and heating surface 3,842 square feet, was then selected for experiment. It will be observed that as regards grate and heating surface the boilers are practically identical. Trials were made in order to ascertain how many pounds of water could be converted into dry steam per pound of coal, burning the same with natural draught and at approximately equal rates of combustion. The vessels were moored alongside the quay, and water was taken from the town main and measured carefully into tanks before being pumped into the boilers. The trials were made at the same place, by the same staff, with the same quality coal, and under as nearly as possible the same conditions, in order to render the comparative trials perfectly fair. The following particulars give the results:

FOUR BELLEVILLE BOILERS.

Duration of trial.	Coal consumed in lbs. per sq. ft. of grate.	Water evaporated per lb. of coal from temp. of feed.	Steam pressure in boilers.	Temperature of feed water, deg. Fah.
8 hours	18.8	8.3	200 lb.	40 deg.
do.	19.43	9.1	do.	40 deg.
do.	19.4	9.0	do.	40 deg.
do.	24.5	7.83	do.	50 deg.
do.	12.0	8.5	do.	50 deg.
do.	12.0	9.16	do.	50 deg.
do.	9.2	8.64	do.	50 deg.

TWO SINGLE-ENDED, THREE-FURNACE, CYLINDRICAL BOILERS.

8 hours	12	7.59	124 lb.	50 deg.
do.	20	8.02	124 lb.	50 deg.
do.	28	7.85	138 lb.	50 deg.
do.	12	8.44	110 lb.	50 deg.
do.	20	8.09	110 lb.	50 deg.
do.	28	7.86	132 lb.	50 deg.

It should be noted that the above results were obtained from feed-water, and that the water-tube boiler raised steam to 200 pounds pressure, against the cylindrical boiler at from 110 pounds to 138 pounds. This was necessary in order to make the comparative tests perfectly fair, because although in the Belleville boiler steam was raised to 200 pounds per square inch, it was reduced to 135 pounds per square inch at the engines; whereas in the cylindrical single-ended boilers the engines were supplied direct from the boiler at the working pressure. Owing to the reduction of pressure between the boilers and engines, the steam was delivered to the engines in a superheated condition in the case of the Belleville, and was consequently plus this advantage. The cylindrical boilers were to Admiralty scantlings, and weighed, together with water, lagging, fittings, and uptakes complete, about 100 tons. The Belleville boilers weighed, with casings, brickwork, water, and all appurtenances peculiar to this system, about 50 tons, showing a saving of, say, fifty tons in favor of the water-tube boiler. Of course it must be remembered that the report of these trials is furnished by the British representatives of the French boiler.

"SAILING DIRECTIONS FOR LAKE SUPERIOR, ST. MARY'S RIVER AND STRAITS OF MACKINAC" IS A PUBLICATION JUST ISSUED BY THE UNITED STATES HYDROGRAPHIC OFFICE. IT IS FAR IN ADVANCE OF PUBLICATIONS OF THE COAST PILOT KIND. PRICE \$1. ADDRESS MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, O. WE HAVE NO HESITANCY IN RECOMMENDING THIS BOOK.



## NEW RULES OF THE ROAD.

CLEVELAND VESSEL MASTERS MAKE CHANGES IN PRESENT REGULATIONS AND SUBMIT THEM TO CONSIDERATION OF OWNERS AND CAPTAINS IN ALL PARTS OF THE LAKES—FULL TEXT OF THE PROPOSED NEW LAW.

For two or three years past vessel masters and owners in Cleveland, Buffalo and other places have discussed the subject of applying to congress for a revision of the present laws governing navigation on the lakes. It has been generally admitted that certain changes, notably that of securing a distinction between the porting signal and the fog signal for steamers without a tow, should be made in the rules. When the supervising inspectors held last spring that passing signals should not be blown unless vessels were actually in sight of each other, the demand for a revision of the rules became more urgent. Accordingly, a conference between a large number of leading vessel masters and Attorney Harvey D. Goulder was held in Cleveland on Monday last, and the rules now in force on the lakes, together with the new rules for preventing collisions at sea, which are to be enforced by leading maritime nations in March, of this year, were taken up and changes made where it was thought necessary to suit lake navigation. The revised code will be submitted to the Lake Carriers' Association and to vessel masters in all lake cities, before it is presented to congress. Immediately following the meeting Monday, Mr. Goulder was called to Detroit, but he prepared in that city the rules as outlined by the vessel masters, and forwarded them to the REVIEW to be put in print for discussion. In submitting the proposed new act, Mr. Goulder, who will be in Cleveland on Friday of this week to meet with the vessel masters, says:

"Two forms are submitted for concluding the rules, beginning with rule 25. The shorter form is with a view to leaving the rules of the supervising board, which begin on page 67 of the edition of 1894 of the pamphlet issued by the government, just as they are, but of course with the amendment that the foot note against use of passing signals in fog would be abrogated by the statute. Subject to this change, rules one to nine would stand, except also the second provision of rule 4, providing for vessels drifting ringing their bells, which would be abrogated by the new law. The new law as proposed requires all vessels under way to sound the whistle, and in the definition of the vessel under way it says: "The vessel shall be so considered when not at anchor or moored to the shore or grounded," so that the vessel drifting would be under way and would have to carry the lights and give fog signals, etc., of a vessel under way. The second proposed copy for closing embodies in the statutory rules themselves, the substance of what is contained in the supervisors' rules."

## PROPOSED RULES FOR LAKE NAVIGATION.

Be it enacted by the senate and house of representatives of the United States of America, in congress assembled, that the following rules for preventing collisions shall be followed in the navigation of all public and private vessels of the United States upon the great lakes and their connecting and tributary waters as far east as Montreal, Quebec, and in the harbors, lakes and inland waters of the United States:

## STEAM AND SAIL VESSELS.

RULE I. Every steam vessel which is under sail and not under steam, shall be considered a sail vessel; and every steam vessel which is under steam, whether under sail or not, shall be considered a steam vessel. The word steam vessel shall include any vessel propelled by machinery. A vessel is under way within the meaning of these rules when she is not at anchor or made fast to the shore or aground.

## LIGHTS.

RULE II. The lights mentioned in the following rules and no others shall be carried in all weathers from sunset to sunrise. The word visible in these rules when applied to lights shall mean visible on a dark night with a clear atmosphere.

RULE III. Except in the cases hereinafter expressly provided for, a steam vessel when under way shall carry:

- a. On the front of the foremast, or if a vessel without a foremast, then in the forepart of the vessel, at a height above the hull of not less than twenty feet, and if the beam of the vessel exceeds twenty feet then at a height above the hull not less than such beam, so, however, that such height need not exceed forty feet, a bright white light so constructed as to show an unbroken light over an arc of the horizon of twenty points of the compass, so fixed as to throw the light ten points on each side of the vessel, namely, from right ahead to two points abaft the beam on either side, and of such character as to be visible at a distance of at least five miles.
- b. On the starboard side, a green light, so constructed as to throw an uniform and unbroken light over an arc of the

horizon of ten points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the starboard side, and of such a character as to be visible at a distance of at least two miles.

- c. On the port side, a red light, so constructed as to show a uniform and unbroken light over an arc of the horizon of ten points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the port side, and of such a character as to be visible at a distance of at least two miles.
- d. The said green and red lights shall be fitted with inboard screens projecting at least three feet forward from the light, so as to prevent these lights from being seen across the bow.
- e. A steamer of over one hundred and fifty feet in registered length shall also carry when under way, an additional white light similar in construction to that mentioned in subdivision a, and so fixed as to throw the light from right ahead to two points abaft the beam on each side. Such additional lights shall be placed in a line with the keel at least fifteen feet higher and more than fifteen feet abaft the light mentioned in subdivision a.

## STEAM TOWING.

RULE IV. A steam vessel having a tow other than a raft shall in addition to the forward bright light mentioned in subdivision a of Rule III carry in a vertical line not less than six feet above or below that light, a second bright light of the same construction and character and fixed and carried in the same manner as the forward bright light mentioned in said subdivision a of Rule III. Such steamer may also carry a small bright light abaft the forward or after mast for the tow to steer by, but such light shall not be visible forward of the beam.

RULE V. A steam vessel having a raft in tow shall in addition to the side lights and the after bright light, when such additional bright light is required by Rule III, carry on or in front of the foremast, or if a vessel without a foremast then in the forward part of the vessel, in a horizontal line athwartships and not less than six feet apart, two bright lights, each of the construction and character and fixed in the manner provided in subdivision a of Rule III, so as to throw an unbroken light from right ahead to two points abaft the beam on either side. Such steamer may also carry the small steering light aft, of the character and fixed as required in Rule IV.

RULE VI. A sailing vessel under way, and any vessel being towed shall carry the side lights mentioned in Rule III. A vessel in tow with another vessel astern of her in the same tow may carry a small bright light aft for the vessel astern to steer by but such light shall not be visible forward of the beam.

RULE VII. River steamers navigating waters flowing into the Gulf of Mexico, and their tributaries, shall carry the following lights, namely: one red light on the outboard side of the port smoke pipe, and one green light on the outboard side of the starboard smoke pipe. Such lights shall show both forward and abeam on their respective sides.

RULE VIII. The lights for ferry boats and for rafts shall be regulated by such rules as the board of supervising inspectors of steam vessels have heretofore prescribed or shall hereafter prescribe.

Or Rule 8 may read:

RULE VIII. The lights for tugs under thirty (?) tons burthen employed on the great lakes and their tributary and connecting waters, whose principal business is harbor towing, and for boats navigating only on the river St. Lawrence, or on rivers not connecting or tributary to the great lakes, or on rivers not flowing into the Gulf of Mexico or tributary to such rivers, and on ferry boats, rafts and canal boats, shall be regulated by rules which have been or may hereafter be prescribed by the board of supervising inspectors of steam vessels.

RULE IX. Whenever, as in the case of small vessels during bad weather, the green and red lights cannot be fixed, these lights shall be kept on deck, on their respective sides of the vessel, ready for instant exhibition, and shall, on the approach of or to other vessels, be exhibited on their respective sides in sufficient time to prevent collision, in such manner as to make them most visible, and so that the green light shall not be seen on the port side, nor the red light on the starboard side. To make the use of these portable lights more certain and easy, they shall each be painted outside with the color of the light they respectively contain, and shall be provided with suitable screens.



RULE X. All vessels, whether steam vessels or sail vessels, when at anchor in roadsteads or fairways, shall, between sunset and sunrise, exhibit where it can best be seen, but at a height not exceeding twenty feet above the hull, a white light in a globular lantern of eight inches in diameter, and so constructed as to show a clear, uniform, and unbroken light, visible all around the horizon, and at a distance of at least one mile.

RULE XI. Coal boats, trading boats, produce boats, canal boats, oyster boats, fishing boats, rafts or other water craft, navigating any bay, harbor, or river by hand power, horse power, sail, or by the current of the river, or which shall be anchored or moored in or near the channel or fairway of any bay, harbor, or river, shall carry one or more good white lights, which shall be placed in such manner as shall be prescribed by the board of supervising inspectors of steam vessels.\*

RULE XII. Open boats shall not be required to carry the side lights required for other vessels, but shall, if they do not carry such lights, carry a lantern having a green slide on one side and a red slide on the other side; and on the approach of or to other vessels such lantern shall be exhibited in sufficient time to prevent collision, and in such a manner that the green light shall not be seen on the port side, nor the red light on the starboard side. Open boats, when at anchor or stationary, shall exhibit a bright white light. They shall not, however, be prevented from using a flare-up in addition if considered expedient.

RULE XIII. Sailing vessels shall at all times on the approach of any steamer during the night time show a lighted torch upon that point or quarter to which such steamer shall be approaching. Any vessel in tow being the stern vessel of such tow shall, on the approach of a steamer over-hauling the tow from abaft the beam during the night time show, a lighted torch at or near the stern.

RULE XIV. The exhibition of any light on board of a vessel of war of the United States may be suspended whenever, in the opinion of the secretary of the navy, the commander in chief of a squadron, or the commander of a vessel acting singly, the special character of the service may require it.

#### FOG SIGNALS.

RULE XV. A steam vessel shall be provided with an efficient whistle sounded by steam or by some substitute for steam placed before the funnel not less than eight feet from the deck, or in such other place as the local inspectors of steam vessels shall determine, and with an efficient bell. It is hereby made the duty of the United States local inspectors of steam vessels when inspecting the same to require each steamer to be furnished with an efficient whistle suitable and corresponding in size and character to the steam pressure used. A sailing vessel shall be provided with an efficient fog horn sounded by a bellows or other mechanical means and with an efficient bell. Whenever there is thick weather by reason of fog, mist, falling snow or heavy rainstorms, whether by day or by night, fog signals shall be used as follows:

- a. A steam vessel under way, excepting only a steam vessel with raft in tow, shall sound at intervals of not more than one minute, three short blasts of her whistle.
- b. A steamer with a raft in tow shall sound at intervals of not more than one minute a screeching or Modoc whistle for from three to five seconds.
- c. A sailing vessel under way and not in tow shall sound at intervals of not more than one minute.
  - If on the port tack with wind forward of abeam, one blast of her fog horn.
  - If on the starboard tack with wind forward of the beam, two blasts of her fog horn.
  - If she has the wind abaft the beam on either side, three blasts of her fog horn.
- d. Any vessel at anchor and any vessel aground in or near a channel or fairway shall at intervals of not more than (one, two) minute ring the bell rapidly for three to five seconds.
- e. A vessel in tow shall give no fog signal. Vessels of less than ten tons registered tonnage, not being steam vessels, shall not be obliged to give the above mentioned signals, but if they do not, they shall make some other efficient sound signal at intervals of not more than one minute.
- f. Coal boats, trading boats, produce boats, oyster boats, fishing boats, rafts or other water craft navigating by hand power, or by the current of the river, or anchored or moored in or near the channel or fairway and not in any port, shall sound a

fog horn, or equivalent signal, at intervals of not more than one minute.

RULE XVI. Every vessel shall in thick weather, whether caused by fog mist, falling snow or heavy rainstorms, go at moderate speed.

#### STEERING AND SAILING RULES.

##### SAILING VESSELS.

RULE XVII. When two sailing vessels are approaching one another so as to involve risk of collision, one of them shall keep out of the way of the other, as follows, namely:

- a. A ship which is running free shall keep out of the way of a ship which is close hauled.
- b. A ship which is close hauled on the port tack shall keep out of the way of a ship which is close hauled on the starboard tack.
- c. When both are running free, with the wind on different sides, the ship which has the wind on the port side shall keep out of the way of the other.
- d. When they are running free with the wind on the same side, the ship which is to windward shall keep out of the way of the ship which is to leeward.

##### STEAM VESSELS.

RULE XVIII. If two steam vessels are meeting end on or nearly so, so as to involve risk of collision, the helms of both shall be put to port, so that each may by directing her own course to starboard, pass on the port side of the other.

RULE XIX. If two vessels under steam are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way of the other.

RULE XX. If two vessels, one of which is a sail vessel and the other a steam vessel, are proceeding in such direction as to involve risk of collision, the steam vessel shall keep out of the way of the sail vessel.

RULE XXI. Every steam vessel, when approaching another vessel, so as to involve risk of collision, shall slacken her speed, or, if necessary, stop and reverse.

RULE XXII. Every vessel overtaking any other vessel shall keep out of the way of the last mentioned vessel.

RULE XXIII. Where by the above rules one of two vessels is to keep out of the way, the other shall keep her course and speed.

RULE XXIV. In taking any course authorized or required by these regulations, and in all cases when about to pass another ship within one-half mile of each other, a steam vessel under way shall indicate her intended course to such other ship by the following signals on her whistle, namely: One blast to mean, I am porting my helm or otherwise so directing my course that I expect to pass port to port; two blasts to mean, I am starboarding my helm or otherwise so directing my course that I expect to pass starboard to starboard hand.

RULE XXV. Every vessel overtaking any other vessel shall keep out of the way of the last mentioned vessel.

RULE XXVI. Where, by any of the rules herein prescribed, one of two vessels shall keep out of the way, the other shall keep her course and speed subject to the provisions of Rule 24 and the qualifications of Rule 27.

RULE XXVII. In construing and obeying these rules due regard shall be had to all dangers of navigation and collision and to any special circumstances which may render a departure from the above rules necessary in order to avoid immediate danger.

RULE XXVIII. Nothing in these rules shall exonerate any vessel, or the owner or master or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper look-out, or of a neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

SECTION 2. That all laws or parts of laws inconsistent with the foregoing rules for preventing collisions, for the navigation of all public and private vessels of the United States upon the great lakes, etc., as in heading, are hereby repealed.

SECTION 3. This act shall take effect from \_\_\_\_\_

#### FORM 2, REFERRED TO IN INTRODUCTION.

RULE XXVI. When steam vessels navigating in the great lakes and their connecting or tributary waters are meeting end on, or nearly so, the helms of both shall be put to port, and the vessels shall pass port to port.

When so meeting that their courses prolonged would lie so distinctly on the port sides of each other that they are not meeting end on or nearly so, they shall pass port to port.



### Pennsylvania Company's Early Canal Boats.

Somebody connected with the Pennsylvania railroad has been writing to Engineering of London about canal boats and rolling stock operated by that road fifty years ago. The freight traffic was then relatively heavy from Philadelphia to Johnstown and Pittsburg, and the mountain section was overcome by the Portage railroad joining the canals on either side. As early as 1839 sectional freight boats were put in service, which, on reaching the end of the canal, could be separated into three parts, mounted on cars, and hauled up the planes by fixed engines and along the level by locomotive. This method was employed for many years. The boats as they appeared in sections on trucks and as they appeared when joined together are shown in the engravings. Fig. 3 illustrates the form of passenger canal boat which in 1835 was the principal accommodation available. As a contrast, Fig. 5 is an engraving of a

the high pressure there is a piston valve with slide valves on the other cylinders. Steam is furnished by three double-ended boilers with twelve furnaces. The boat has one deck only below the upper deck, like the large iron ore traders on the lakes. She has a water bottom of 3,000 ton capacity, which enables her to run light. On deck there are eight derricks to handle cargo, and the boat has two pole spars and one stack. She is said to be a runner as well as a carrier, 11 knots per hour being claimed for her. The Samoa was built at Sunderland in 1892 and is modern in every particular. Her crew numbers about eighty men. She is double the size of any craft now here."

### New Officers in the Shipmasters' Association.

Lodge No. 4, Cleveland: President, W. S. Mack; first vice-president, J. A. Holmes; second vice-president, George B. Bradley; financial secre-

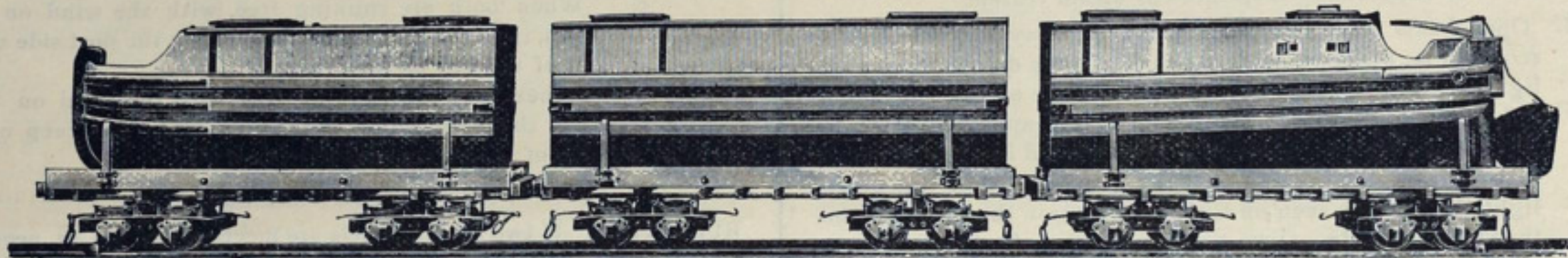


FIG. 1. SECTIONAL FREIGHT BOAT AND CARS, 1843; PORTAGE RAILROAD.

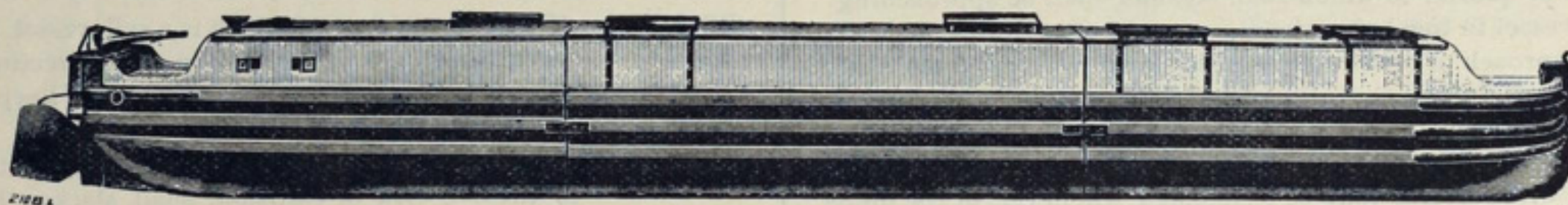


FIG. 2. SECTIONAL FREIGHT BOAT, 1843; PORTAGE RAILROAD.

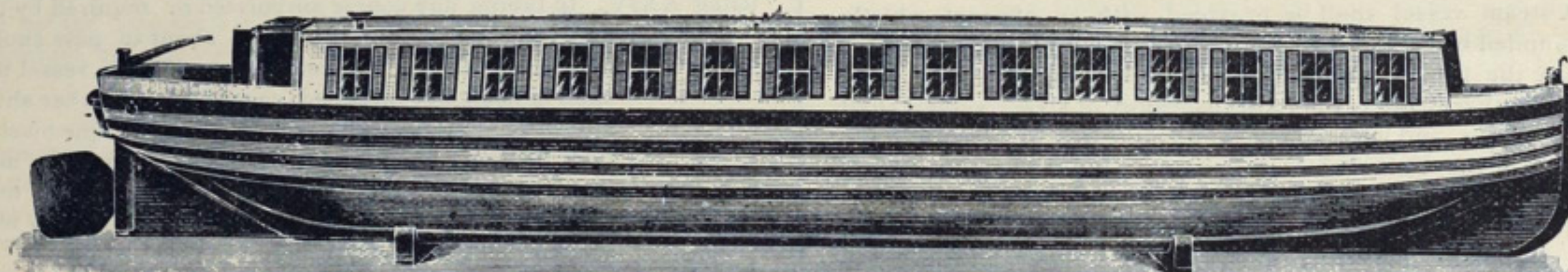


FIG. 3. PASSENGER CANAL BOAT; PENNSYLVANIA CANAL.

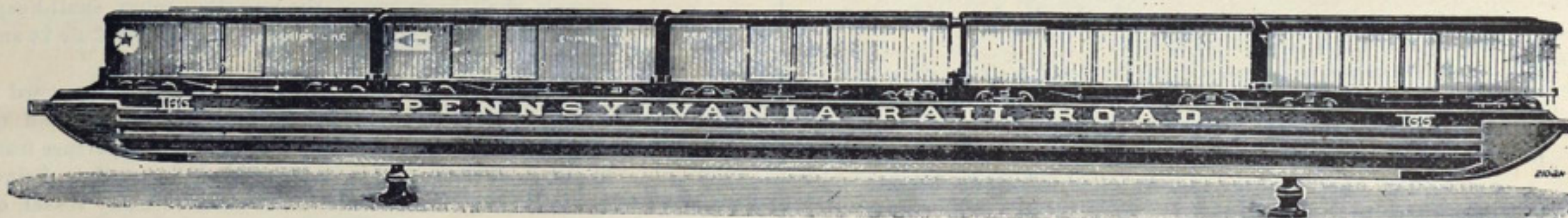


FIG. 5. BARGES FOR TRANSPORT OF FREIGHT CARS, 1893; PENNSYLVANIA RAILROAD.

### PENNSYLVANIA COMPANY'S TRANSPORTS FIFTY YEARS AGO.

model of one of the Pennsylvania Company's most modern barges. A fleet of these boats is employed on the Hudson river to transport the large freight cars from the company's terminus in Jersey City to their depot in New York.

#### A Remarkable Cargo Carrier.

Henry Montague of Bay City, Mich., who is at present in New Orleans, writes the REVIEW about the steamer Samoa, a very large cargo vessel now at that port. "It gives me pleasure at all times" he says "to inform you of anything that appears to me interesting. I went aboard the S. S. Samoa in this harbor, lately, and found that she is a remarkable ship. Her length is 465 feet, beam 53 feet, and on 27½ feet draft she is said to carry 11,500 tons cargo. Her engines are triple expansion, 28, 44, and 72 by 54 inches. The diameter of shaft 14½ inches, and the piston and connecting rods one-half the diameter of shaft. There are no keys at either cross-heads or pins. Slack is taken up with nuts on a bolt. On

tary, W. A. Collier; treasurer, Thomas Jones; recording secretary, C. A. Benham; chaplain, John Lowe; marshal, C. Wallace; warden, E. Rattray; sentinel, Joseph Sanders; delegate to Grand Lodge, W. S. Mack, alternate, C. E. Benham.

Lodge No. 3, Chicago: Robert Young, president; H. J. Hatch, first vice-president; H. F. Loftus, second vice-president; W. G. Turner, treasurer; F. B. Higgin, secretary; Robert Young, delegate to Grand Lodge; George Tebo, alternate.

Lodge No. 7, Detroit: President, C. L. Wilson; first vice-president, A. J. McKay; second vice-president, A. J. Fox; treasurer, Hiram Still; financial secretary, George U. Wilson; corresponding secretary, H. C. McCullom; chaplain, J. Parsons; marshal, George E. Merritt; warden, R. H. Sutherland; sentinel, Henry Berlin; trustees, Joseph Waltman, H. C. Bassett.



### A Conservative Summary of Mesabi Iron Conditions.

Among several special articles in the issue of the Iron Trade Review of Jan. 3, which is a big edition of rare merit, is one from Mr. Winchell, state geologist of Minnesota, reviewing operations on the Mesabi iron range, with special reference to mining costs. Mr. Winchell says that of 684,194 gross tons of ore produced on the new range in 1893, about 50 per cent. was Bessemer that was about 62 per cent. in iron. With the assistance of Mr. Finley, editor of the Iron Trade Review, Mr. Winchell has succeeded in preparing the following correct table of shipments from all Mesabi mines for 1894:

Mine.	Product.	Royalty.
Auburn (Iron King).....	107,865 tons	30 cents.
Biwabik.....	90,023 "	50 "
Canton.....	211,841 "	5 "
Franklin.....	223,399 "	0 "
Hale.....	23,017 "	20 "
Minnewas.....	2,140 "	25 "
Vega (at Eveleth).....	5,268 "	.. "
Missabe Mountain (Oliver).....	505,955 "	50 "
Mountain Iron.....	574,000 "	0 "
Norman.....	38,066 "	25 "
Total.....	1,781,574 tons	

Mr. Winchell estimates that of the 1894 production probably not more than 40 per cent. was strictly Bessemer, although the iron content probably ran above 62 per cent.

"But three-quarters, or 75 per cent. of this ore was," he says, "mined from mines that have been stripped, and the mining cost was undoubtedly less than the maximum figure given in 1892 (\$0.48 per ton). Indeed, it is probable that the average mining cost on the Mesabi, underground and open pit both included, has not exceeded this figure, if we charge against the ore mined this year only the proportion of dead work charges which it should properly bear. Moreover, it is quite certain that, even under the disadvantages under which experimenters in new methods of mining always labor, if the dead work is apportioned over the ore which it opened up, the average cost of open pit mining has not exceeded \$0.25 per ton the past year.

"The operations of the past year have shown that there is a wide difference in the quality of ore from different mines, and even from different parts of the same mine. A larger percentage of the Mesabi output has been non-Bessemer in 1894 than was the case in 1893. One reason for this is that certain mines, like the Biwabik, Berringer and Minnewas, whose product is nearly all Bessemer, have made a much smaller output than last year. Another reason is that the non-Bessemer ore is usually at the upper part of the ore body and is first reached in steam shovel mining. This is true of the Missabe Mountain, and to a certain extent of the Mountain Iron, although the latter has to contend with sudden variations in the quality of the ore regardless of its position in the ore body. The shipments from these properties for 1895 and the following year will undoubtedly average better than those made during the past season.

"Many transactions have taken place in the past year in which a reduction of royalty has been effected. Some mines have been purchased in fee. Others have reduced the royalty for a cash consideration or because of an increase of the output guaranteed by the operators. In still other cases the sub-lessee has been eliminated by purchase or through failure to comply with the terms of his lease and its consequent forfeiture. There are but two mines now being operated under a sub-lease at high royalty, and it is questionable whether there is any profit in it at the present price of ore. It seems not improbable that there will be still further reductions in royalties. As fee mines increase in number it becomes more difficult for royalty mines to compete with them, so small is the margin between profit and loss. With a demand for Mesabi ore which is decidedly limited as compared with the possible production, it is plain that competition will be active and prices low. Even with a consumption of eight million tons of Lake Superior ore in 1895, there will probably not be a demand for more than 2,500,000 tons of Mesabi ore; while it will be generally admitted by those familiar with the range that there would be no great difficulty in producing 4,000,000 tons. The mines are able to make the output; the railroads could handle it, and there are ample dockage facilities. The only question is that of lake freight. It is thus readily seen that the fee mines have the advantage, and since these are largely in the hands of the companies which also own the railroads the royalty mines labor under an additional disadvantage.

"Contracts for large minimum output are unfortunate features of Mesabi mining. Under an obligation to pay for an excessive amount of ore each year, whether it is mined or not, the ore market is flooded and prices forced down below what is paid for the same quality of ore from other ranges. Indeed, until furnaces are so modified as to use a larger percentage of Mesabi ore in their mixtures, and until Mesabi producers stop cutting each others' throats, there will inevitably be this discrepancy in price. Old range producers have discovered that at present they are

not obliged to enter into competition with Mesabi ores to such an extent as they feared. Their ore is in demand in any event, and they can ask a higher price than they have received in 1894. It is likely, therefore, that there will be a wider difference in price between established grades and Mesabi ore in 1895 than there has been in 1894. It is then only natural to expect that there will be so much economy in using the cheaper ore that such modification as is necessary to use 50 or 60 per cent. of it will be made in the furnaces, thus leading to an increased demand for these grades in 1896. Prices will then be more nearly equalized and Mesabi operators will perhaps be able to reap a profit where it is now impossible.

"The amount of 'ore in sight' on the new range has increased materially in the past year. New discoveries are made from time to time and the end is not yet. It is no exaggeration to say that there is now known to exist on the Mesabi at least 200,000,000 tons of iron ore. Of this probably not more than 40 per cent. is Bessemer. The disposition of the non-Bessemer ore is going to be a serious question. At present the market for it is daily growing more restricted. Complications will inevitably ensue, arising from the provisions of some of the leases and contracts already made. The only apparent means of utilizing these lower grade ores is by the perfection of some process of smelting without fuel—by electricity, for example. Such a discovery, while bringing about sudden and widespread changes in the iron industry, would be of great benefit to the country in general, as it would permit the manufacture of iron to be carried on in locations where fuel and iron products are costly, but iron ore and water power for the generation of electric power are abundant. If we may believe recent reports from Germany, the day for electric reduction of iron ore is not far distant.

"To recapitulate: In 1892, Pittsburg, Chicago and Cleveland iron ore merchants scorned Mesabi mines; now they are purchasing them at high prices. The ore is stripped and mined at a cost of 25 cents, or mined under ground for less than 50 cents a ton. Royalties on Mesabi mines are being reduced or entirely wiped out and high royalty operators must find it difficult to derive any profit from their mines at present. Mesabi ores will probably sell for considerably less than ore from other ranges in 1895, but there may not be so much difference in price in subsequent years. Although only a small percentage of Mesabi ore is used in furnace mixture at present, there will probably be a production of 2,500,000 tons in 1895, and perhaps, 4,000,000 tons in 1896. A large percentage of Mesabi ore is non-Bessemer, and will never be transported any great distance for its consumption."

### Cost of Moderate Enlargement of New York Canals.

The approximate cost of obtaining 9 feet of water in the New York state canals is thus estimated by State Engineer Adams in his report to the late constitutional convention:

	Work.	Land Damages.	Total.
Erie.....	\$4,810,000	\$500,000	\$5,310,000
Oswego.....	1,133,000	75,000	1,208,000
Champlain.....	4,000,000	300,000	4,300,000
Black River.....	8,800,000	80,000	8,880,000
Cayuga and Seneca.....	240,000	20,000	260,000
Oneida.....	310,000	25,000	335,000
Totals.....	\$19,293,000	\$1,000,000	\$20,293,000

It is estimated that the Champlain canal could be deepened for \$1,831,000. The Canal Union people put the total cost of deepening all the canals to 9 feet at about \$18,000,000.

### Late Publications.

Mr. E. C. O'Brien, ex-commissioner of navigation, has an article in the Dec. 26 issue of the Journal of Commerce, New York, giving his views in favor of the establishment of a department of commerce.

Naval constructor Robert G. Skerrett, contributed to Harper's weekly of Dec. 22 an article descriptive of the three torpedo boats, on which the navy department recently asked for proposals. Among ship building firms now in communication with the department regarding bids on these boats are the following: Wm. Cramp and Sons Ship and Engine Building Company, Union Iron Works, Columbian Iron Works, Bath Iron Works, Quintard Iron Works, Newport News Ship Building and Dry Dock Company, Herreshoff Manufacturing Company, Samuel L. Moore & Son, George Lawley & Son, Boston, Mass.; Fulton Engineering and Ship Building Works, San Francisco; Durham, Carrigan & Hayden Company, New York; Coronado Foundry and Machine Company, San Diego; Neafe & Levi Ship & Engine Building Company, Philadelphia, Pa.; Charles L. Seabury & Company, New York; Maryland Steel Company, Gatling Torpedo Boat Company; Detroit Boat Works, Detroit, Mich.; Globe Iron Works Company, Cleveland; New York Ship Building and Engine Company, Columbia Safety Steamship Company, Boston.

"The Evolution of Shipping and Ship Building in California" is the title of an article by Irving M. Scott of the Union Iron Works in the January number of the Overland Monthly, San Francisco.





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AT LAST the vessel masters of the lakes have taken a decided stand towards securing the passage of a well-defined collection of rules for the safe navigation of their vessels. The proposed rules, as prepared by Attorney Harvey D. Goulder of Cleveland in conference with a large number of the most competent masters on the lakes, and as they are to be submitted to the Lake Carriers' Association and the organizations of captains of leading lake ports for criticism and revision, are printed in full elsewhere in this issue. The most important change proposed has reference to fog signals, a subject that has created a great deal of comment, especially since the board of supervising inspectors of steam vessels has held that no passing signals shall be blown in fog. Of course it is well known that this rule has been almost wholly disregarded during the past season. It is proposed when the rules here referred to are fully considered and agreed upon to go before congress and urge their adoption for the lakes. No radical departures from past customs are involved in the change, but necessary reforms that have been repeatedly pointed out during the past two or three years will be strongly advocated.

A SERIOUS error was made in the last issue of the REVIEW. A page of engravings purporting to illustrate the construction of the Canadian canal at Sault Ste Marie, Ont., were reproduced from Industries and Iron, a trade journal of London, England. It was intimated that the engravings were secured from the engineers of the dominion government in charge of the canal, and as no plans of the work had previously been published in this country, the engravings were taken from the English publication. An examination of them, however, discloses the fact that the most important drawings, figures 1 to 8, inclusive, pertain to the United States canal at Sault Ste Marie, and have no relation to the Canadian canal. Why the drawings of the American canal are given out in England as those of the canal on the Canadian side of the river is not fully understood, but of course it is understood that the United States canal is larger and the construction superior to that of the Canadian canal.

IT IS certainly true that insurance against almost any kind of a risk may be had at Lloyds, London. When the first serious rumors got abroad concerning the illness of the late Czar, Alexander III., some persons who considered that the death of that potentate would injuriously affect their business interests, negotiated with Lloyd's for the covering of this risk, with the result that policies were taken out against the death of the Czar happening within six months from date at a comparatively nominal premium, it being generally thought at the time that, though the illness would probably terminate fatally, death was not likely to occur within six months. The Czar did, however, die within the period, and the underwriters have paid a total loss on the policies.

IF IT is true that Secretary Carlisle of the treasury department is to hold strictly to the ruling that the giving out of medals for bravery in the light-house and merchant marine service applies only to the high seas and not to the great lakes, then an effort should be made to have the law on the subject amended so as to include the lakes. It would be a mistake to discontinue this government recognition of bravery in a district where the coast line is greater in extent than the whole stretch of the Atlantic and the gulf in the east, and where the opportunity for heroism is equally great.

WHY WOULD it not be well for officers of the hydrographic service on the lakes to devote some attention to the matter of height and power of waves? This is a subject that would admit of inquiry with prospects of the results being applied in many directions in a practical way. Representatives of Lloyd's Register, who were in this country a short time ago looking up matters that have an important bearing on the business of marine insurance, sought information on this subject without being rewarded for their efforts.

SENATOR Vilas' bill providing that action be taken with the government of Canada for the appointment of a joint commission to investigate matters pertaining to the construction of a deep water outlet from the lakes to the Atlantic should have unanimous support from Lake shipping interests. It is modest, certainly, and will result in the collection of information on a subject never before brought under formal investigation.

### To Reduce the Net Tonnage of all Vessels.

It is very probable that the present congress will act favorably upon changes proposed by Commissioner of Navigation Chamberlain in the laws for determining the net tonnage of vessels. The proposed changes will reduce the net tonnage of vessels to be built on the lakes as well as in other parts of the country, but the legislation will be of more importance to vessels in the foreign trade than to lake vessels or coasting vessels on the seaboard. By the present law American vessels are given a much higher rating than foreign vessels of the same size, and as wharfage and docking charges are usually based on this rating, they are forced to pay more than the foreign ships do for the same privileges. While other nations allow an American vessel to be measured according to their respective laws, and thus to obtain the benefit of lower net tonnage and lower taxes, still this involves delays and expense, and the custom of American masters appears to be to pay charges on tonnage stated in their American registers. The committee on merchant marine and fisheries has this matter in charge and is ready to support the commissioner's recommendations. The reduction of net tonnage proposed by this bill will in effect reduce the operating expenses of every American vessel engaged hereafter in foreign trade. The bill, it is said, brings the laws of the United States on the subject into substantial accord with the laws of Great Britain and other powers.

### In General.

A writer in the London Economist extends a bit of cheer to Canada by declaring that nickel steel is certain to succeed the ordinary article in ship construction, and that the dominion with its large supplies of nickeliferous ores is to lead in ship building.

Secretary Herbert of the navy has remitted the unexpired portions of the sentences of Commander Oscar F. Heyerman and Lieut. C. H. Lyman, found responsible by court-martial for the loss of the Kearsarge. The officers have been placed on waiting orders.

Another of the British torpedo boat chasers, the Ardent, built by J. I. Thornycroft & Co., had a trial recently, making a mean speed on six runs of 27.84 knots. The maximum revolutions were 404.6 per minute for the starboard and 406.7 for the port engines.

Mr. R. L. Peck, who was in the employ of Pickands, Mather & Co., during the past season, has left Cleveland for Chicago, to enter the employ of the Lake Michigan and Lake Superior Transit Company as chief engineer of the passenger steamer Manitou, and to act as superintending engineer of that company ashore when the Manitou is not in commission.

The British admiralty has given out with authority that the government is contemplating laying down in 1895 two fast cruisers or despatch vessels, to follow in part the innovation of the United States navy, as suggested in the construction of the Columbia and Minneapolis. The British vessels will, however, be only a little more than one-half the displacement of the two American cruisers.

Comdr. J. J. Brice, U. S. N., who was stationed at Chicago during the world's fair, and who is well known on the lakes, has been placed on the retired list. When the Adams grounded in Bering sea, Commander Brice was ill and in bed with a fever, but he put himself on duty at once and took charge of the ship. The exposure resulted in a severe illness, and he was obliged to request to be placed on the retired list. He is now in California.

Although Pickand's, Mather & Co. have taken up the management of the whaleback vessels, negotiations with lake builders for the big 400-foot steel steamer and two tow barges have not been given up. Proposals to build these boats are still under consideration. Capt. Alex McDougall has been asking builders of engines for bids on a large amount of machinery, and there has been some guessing as to whether the contracts for the boats referred to might not go his way.

In the REVIEW of last week, page 7, an unfortunate error crept into an article dealing with masonry in the new American canal lock at Sault Ste. Marie. The measurement of volumes of masonry and concrete was given as cubic feet. It should be cubic yards, the volumes being just nine times greater than indicated by the article. This does not apply to the volume of the largest single stone, and the smallest single stone, respectively, as these were correctly stated in cubic feet.

Of the Nicaragua canal question now before congress, the January Review of Reviews says: "To speak in general terms, and not to enter upon the discussion of details, it would seem a clear proposition that political and financial authority and control of the United States government ought to dominate the affairs of the Nicaragua canal. It is true that Nicaragua is not a portion of the United States; and yet in a very important sense any deep-water channel across Central America would constitute a most essential part of our national coast line. England's interest in the Suez canal on account of her hold upon India has a very shadowy validity in the nature of things, when compared with the propriety of a full control by the United States of the Nicaragua canal."



[Continued from page 7.]

When their courses prolonged would lie so distinctly on the starboard side of each other that they are not meeting end on or nearly so, they shall pass starboard to starboard.

The pilot of either vessel may be first in determining either course as the case may be, and shall thereupon give as signal indicating his purpose, one distinct blast of the whistle if passing port to port, or two distinct blasts of the whistle if passing starboard to starboard.

**RULE XXVII.** In all channels less than five hundred feet in width and in any part of the rivers St. Mary, St. Clair, Detroit, Niagara and St. Lawrence, if two steamers are meeting, the one ascending and the other descending, the descending vessel shall have the right of way. The pilot of such descending steamer shall signify his desire and intention by giving proper signals before the steamers shall have arrived at a distance of one-half mile of each other.

**RULE XXVIII.** In all channels on the great lakes and their tributary and connecting waters less than five hundred feet in width, no steam vessel shall pass another going in the same direction unless the steam vessel ahead be disabled and signify her willingness that the steam vessel astern shall pass; when the steam vessel astern may pass, subject however to the other rules applicable to such a situation. And when steam vessels proceeding in opposite directions are about to meet in such channels, both such vessels shall be slowed down to a moderate speed according to the circumstances.

**RULE XXIX.** Notwithstanding anything contained in these rules every vessel, overtaking any other, shall keep out of the way of the overtaken vessel.

**RULE XXX.** In all weathers a steam vessel under way in taking any course authorized or required by these rules, shall indicate that course by the following signals on her whistle, to be accompanied whenever necessary by corresponding alteration of her helm:

One blast to mean; "I am directing my course to starboard."

Two blasts to mean; "I am directing my course to port."

Except that the repetition by a vessel required to keep her course of the signal of a vessel required to keep out of her way, shall not vary the duties and obligations of the respective vessels.

**RULE XXXI.** If the pilot of a steam vessel to which a passing signal is sounded deems it unsafe to accept an assent to said signal, he shall not sound a cross signal; but in that case, and in every case where the pilot of one steamer fails to understand the course or intention of an approaching steamer, the pilot of such steamer so receiving the first passing signal, or the pilot so in doubt, shall sound several short and rapid blasts of the whistle; and if the vessels shall have approached within half a mile of each other both shall reduce their speed to bare steerage way, and risk of collision shall be deemed to exist.

**RULE XXXII.** In obeying and construing these rules, due regard shall be had to all dangers of navigation and to any special circumstances which may render a departure from the above rules necessary in order to avoid immediate danger.

**SECTION 2.** Nothing in these rules shall exonerate any vessel, or the owner or master or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper lookout, or of a neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

**SECTION 3.** That all laws or parts of laws inconsistent with the foregoing rules for preventing collisions, for the navigation of all public and private vessels of the United States upon the great lakes, etc., as in heading, are hereby repealed.

**SECTION 4.** This act shall take effect from—

Had Naval Constructor Lewis Nixon chosen to stay in the navy, he might have hoped for a salary of \$4,200 a year after twenty years' service, and retirement on half pay at the age of sixty-two. His pay with the Cramps is probably double what his utmost hope promised in the navy, and if his new business venture succeeds he may become a millionaire. Yet the officers of the navy, who have an old-fashioned pride in their profession, do not permit themselves to envy the lot of those who go out of the service to become rich and distinguished in civil life. Line officers in particular often hold that no civil success can confer the distinction that attaches to high naval rank.—New York Sun.

### Great Britain's Greatest Battleship.

Great Britain's greatest battleship, the Magnificent, was a few days ago floated out of the dry dock where she was constructed at Chatham, England. Just one year to a day was occupied in putting 6,000 tons of metal into this big hull. The Magnificent is the first of several vessels of her type, and is 390 feet long, 75 feet beam, and 27 feet 6 inches mean draught, at which the displacement is 14,900 tons. The ship, for two-thirds her length, is armored with 9-inch Harvey plates extending from under the water line to the top, while the barbettes have 14-inch Harvey plates. The bulkheads at the ends of the ship are 9 inches thick. The machinery is of the triple expansion type. The cylinders are 40 inches, 59 inches and 88 inches in diameter, respectively, by 51 inches stroke. The boilers, eight in number, are single ended, 16 feet 1 inch in diameter, by 9 feet 3 inches long, and have each four furnaces. The heating surface is 25,248 square feet, and the grate area 855 square feet. They are to be worked under the Martin's system of induced draught, and the steam pressure is to be 150 pounds to the square inch. At natural draught the power is to be 10,000 indicated horse power, the speed of the ship being 16.5 knots, and under induced draught 12,000 indicated horse power, the speed being 17.5 knots. The armament includes four 12-inch breech-loading, twelve 6-inch, and 28 smaller quick-firing guns.

### Quite a Compliment.

THE MARINE REVIEW, Cleveland, Ohio, has, in these hard times, found ways and means to extend and embellish that enterprising journal in a way to cause envy. With No. 19, which should be No. 253, there was issued four double-page sheets of photographs illustrating the new American transatlantic line ship St. Louis, with some other notable vessels. The work is of the finest description. Next, in No. 20, which should be No. 254, we find a double number, containing a full report of the proceedings of the late meeting of the Society of Naval Architects and Marine Engineers at New York, also an account of the launch of the St. Louis. We have had occasion before this to note how the REVIEW had made itself a model journal, and predicted its success. Cleveland is a good place for success, and some time, not very long hence, is to be a great city, notable for manufactures and energy.—Industry, San Francisco.

### Advice to the Court.

In a gathering of vessel masters a few evenings ago, Mr. Harvey D. Goulder told a story of Capt. "Jim" Lawless as a witness in an admiralty case in Detroit before the venerable Judge Brown, now on the United States supreme court bench.

"Now captain," said the judge, "You say that you think they put the wheel to starboard on that schooner."

"Your honor, I not only think so," Capt. Lawless answered, "but I know it."

"Well now," the judge continued "you tell me that they put the wheel to starboard, and witnesses on the other side say they did not. How am I to decide this case?"

"Well judge, you will just have to do the best you can" came the answer, and the court shook with laughter.

### Launch of the North Land.

The Globe Iron Works Company and the Northern Steamship Company have joined in issuing invitations to the launch of the twin-screw steel passenger ship North Land, which will take place at the Globe company's ship yard, West Old River street, Cleveland, at 2:30 p. m., standard time, Saturday, Jan. 5. The boat will be christened by Mrs. F. P. Gordon of Buffalo, representing the steamship company, and will be launched by Miss M. Gertrude Hanna of Cleveland, representing the ship building company. At the Hollenden on Friday evening, Mr. F. P. Gordon, assistant general manager of the steamship company, will give a dinner to visiting newspaper representatives.

The Chesapeake and Ohio Railway Company, which has secured a big export business in grain, cotton, flour, live stock, etc., by having built in Scotland six or more freight steamers for regular service between Newport News, Va., and Liverpool, is to meet with renewed competition from the Norfolk & Western Railroad Company, which has also organized in London a corporation for the construction and operation of a line of ships of larger capacity than the C. & O. boats. The steamers of the Norfolk & Western company will run between Lambert's Point and Liverpool. One ship of the new line, which has been given the name of Lambert's Point, is now in commission, and seven others, all to be built in Sunderland, England, will be in operation within a year. The first of these ships is 447 feet long, 43 feet wide and 27 feet deep and the others will be of about the same dimensions.

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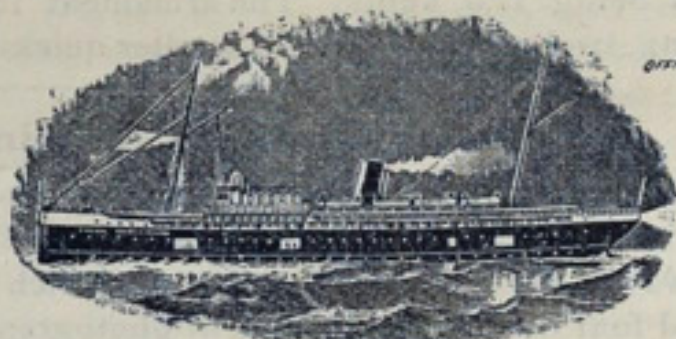
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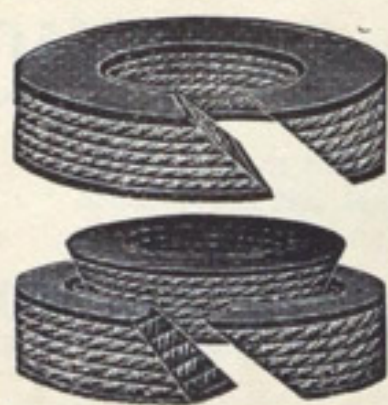
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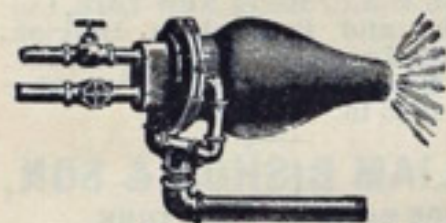
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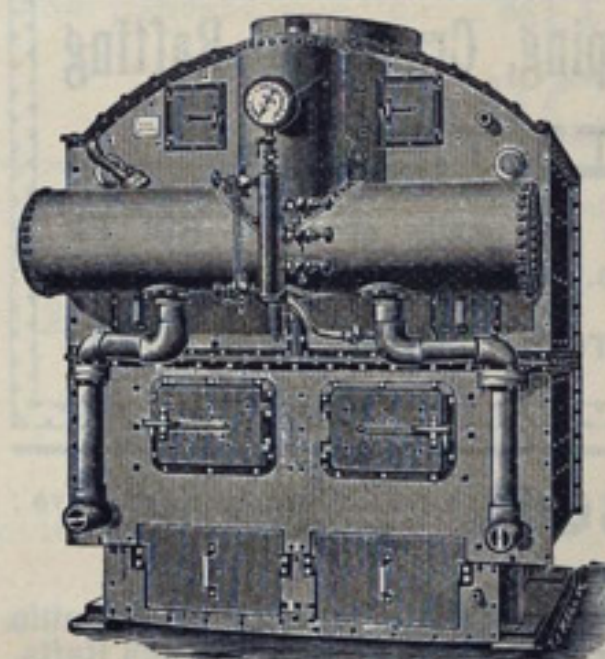
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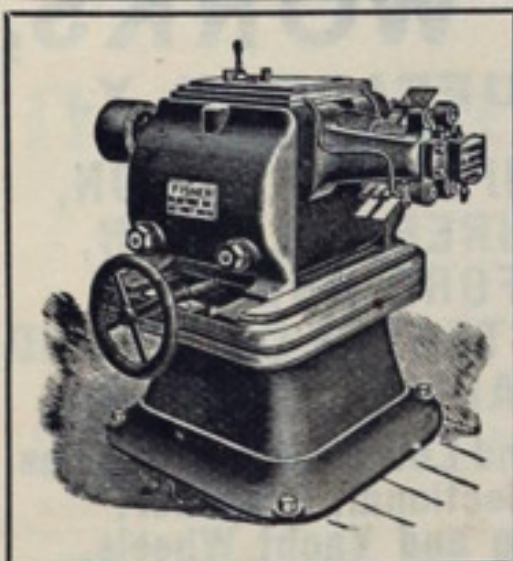
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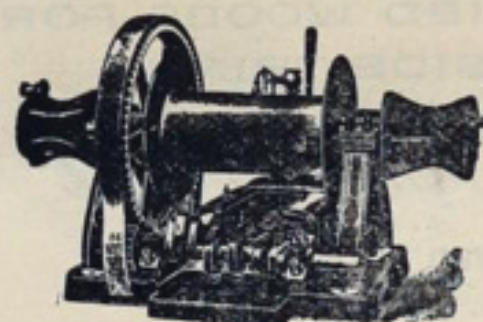
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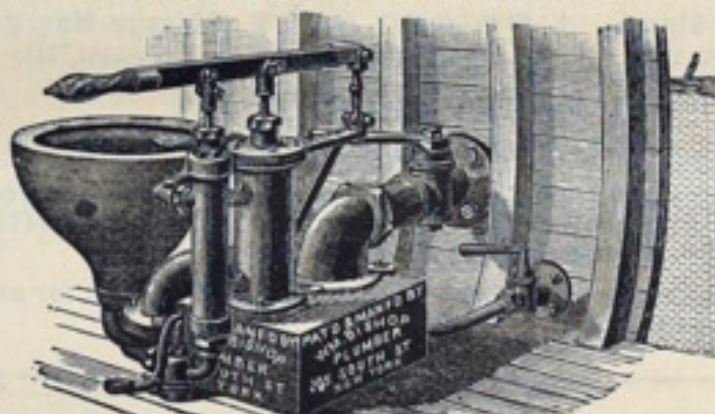
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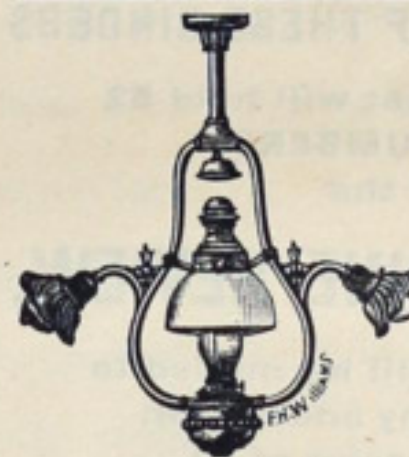
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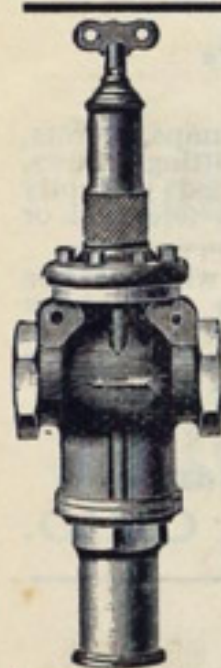
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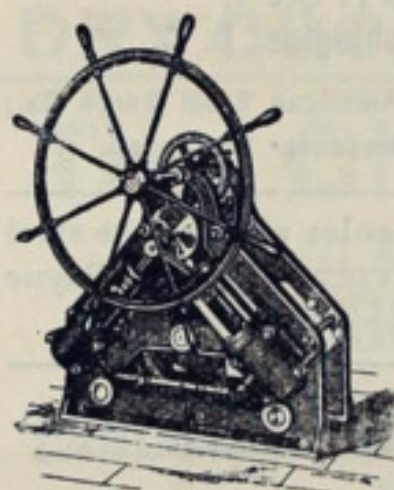
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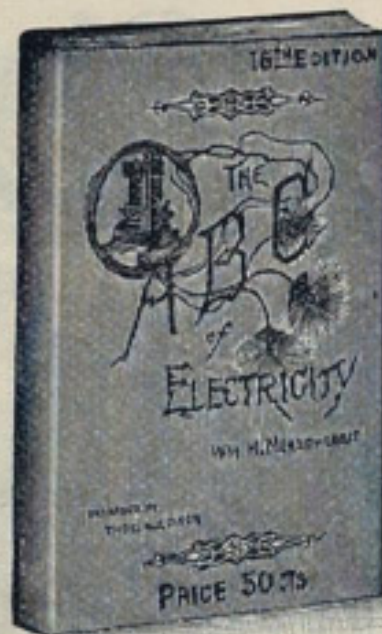
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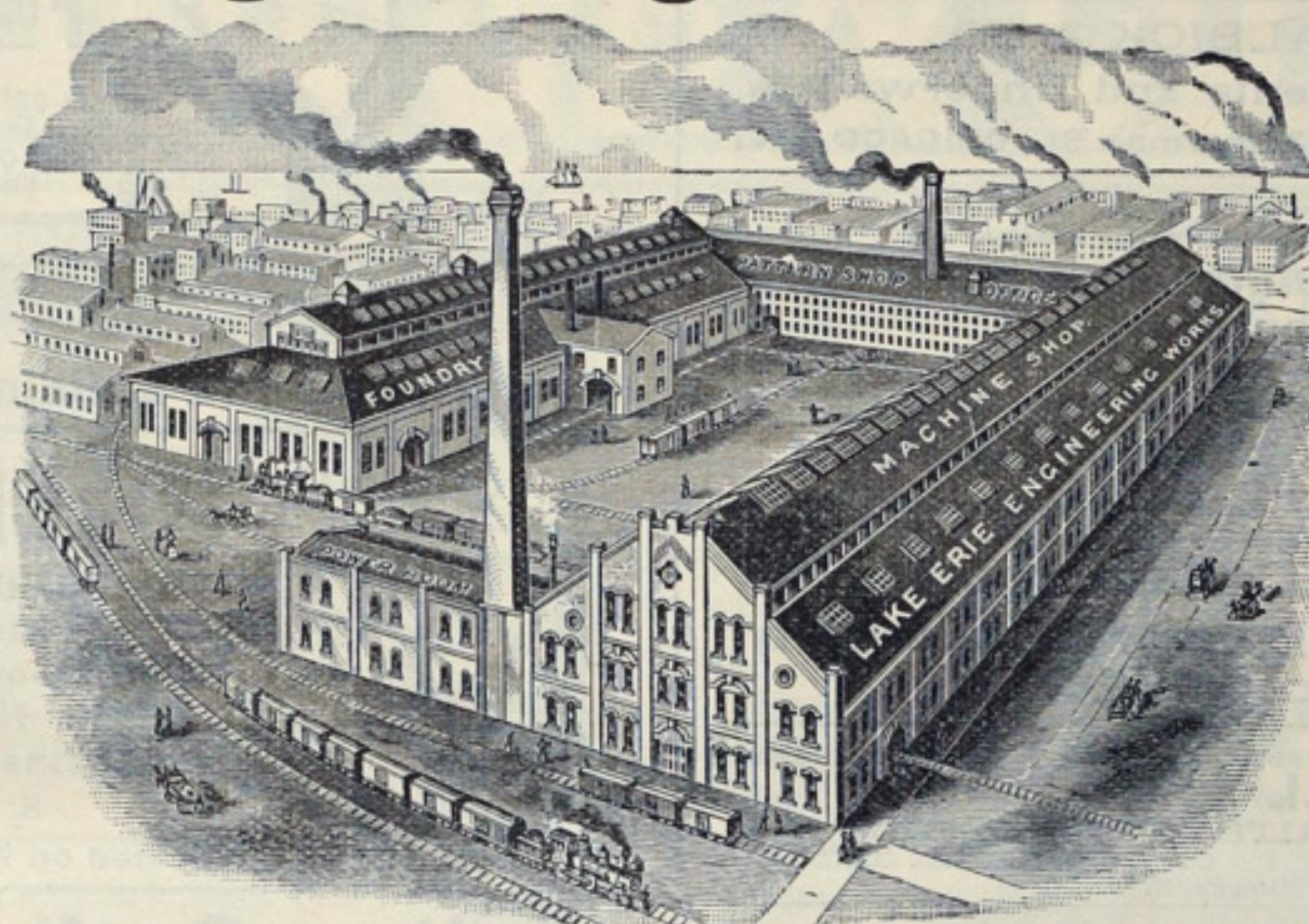


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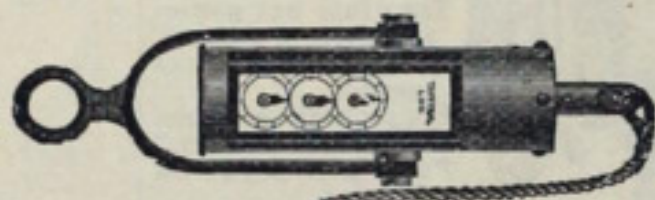
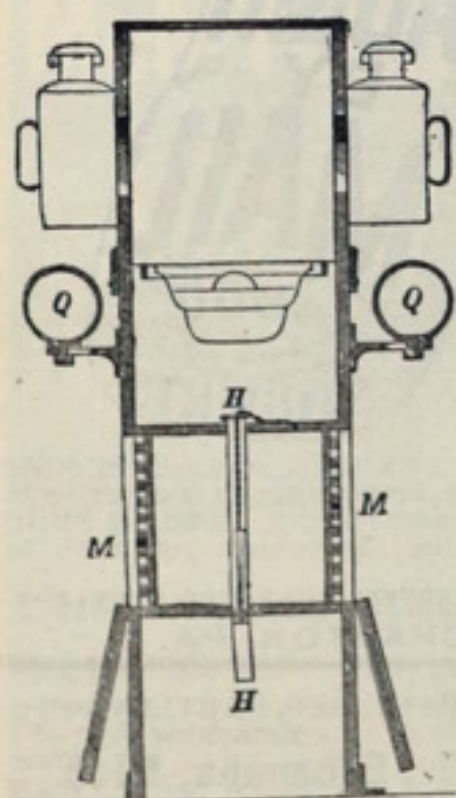
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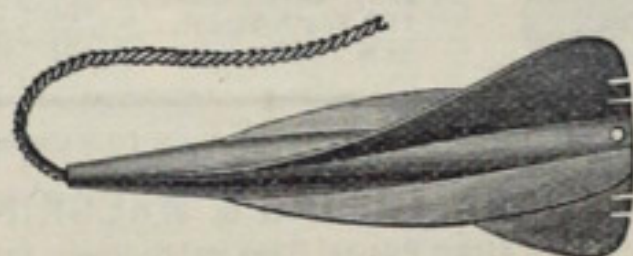
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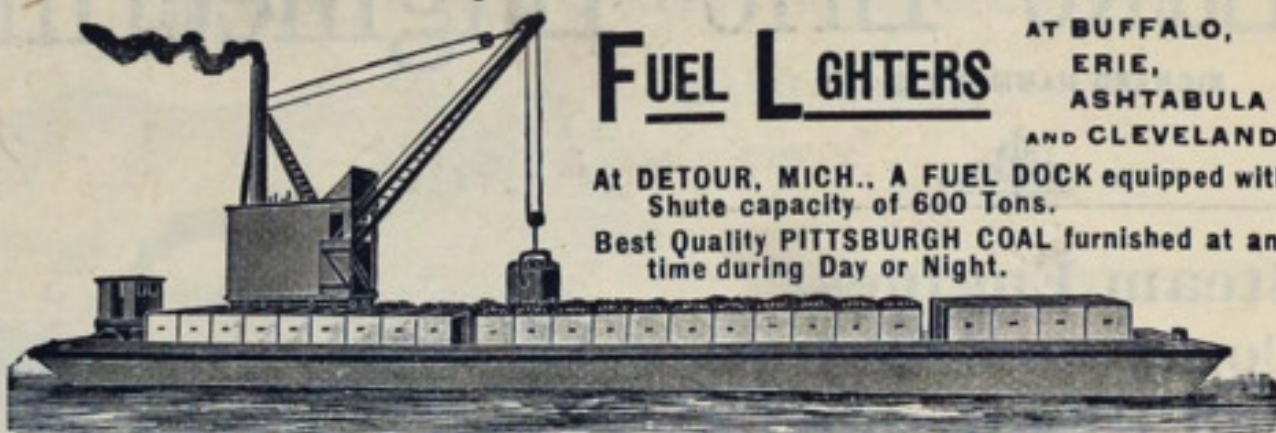
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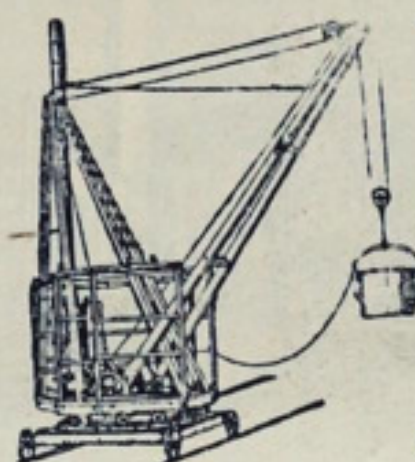
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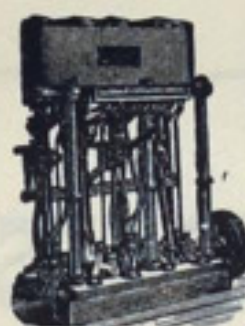
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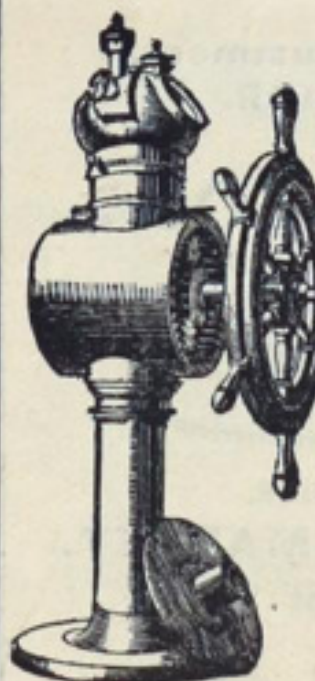
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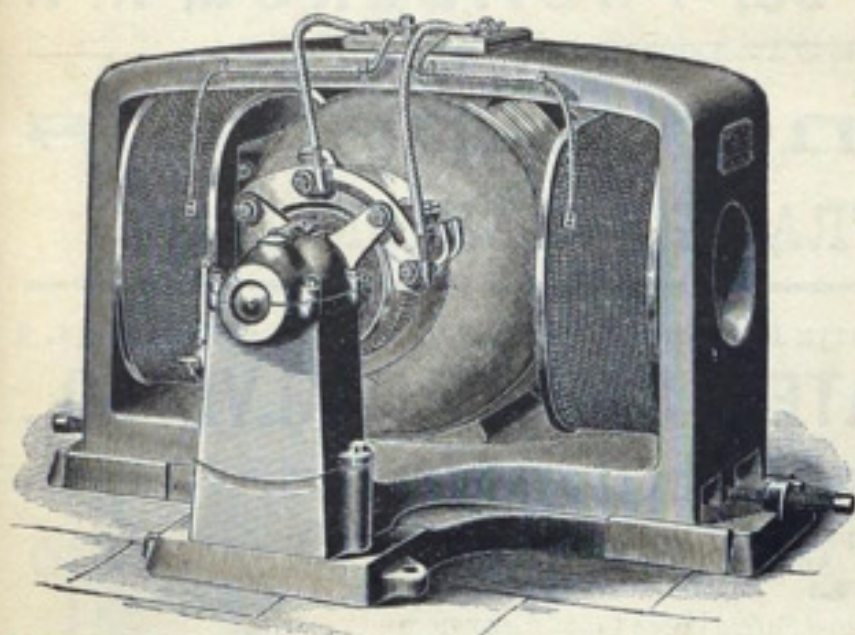
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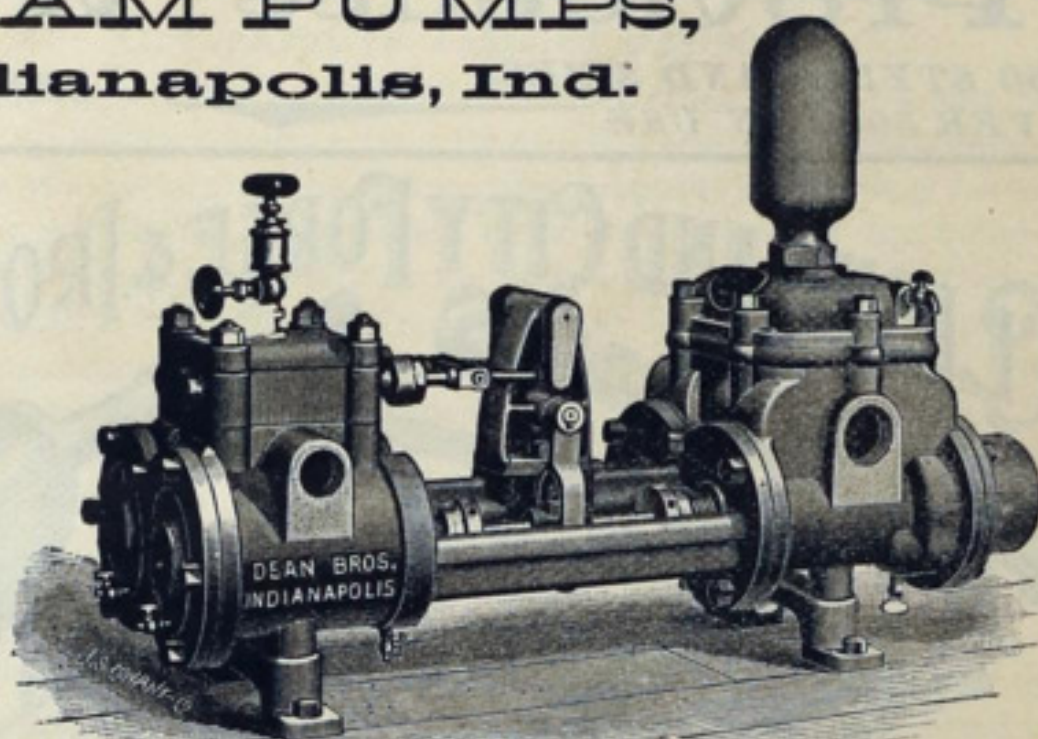
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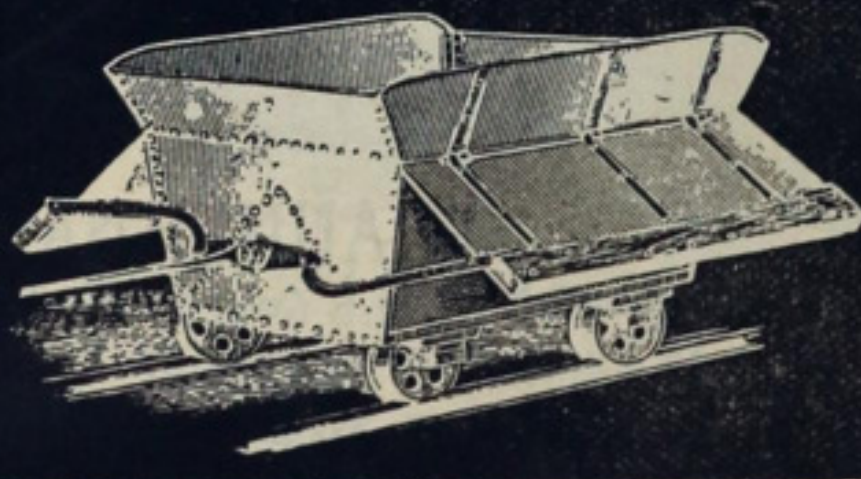
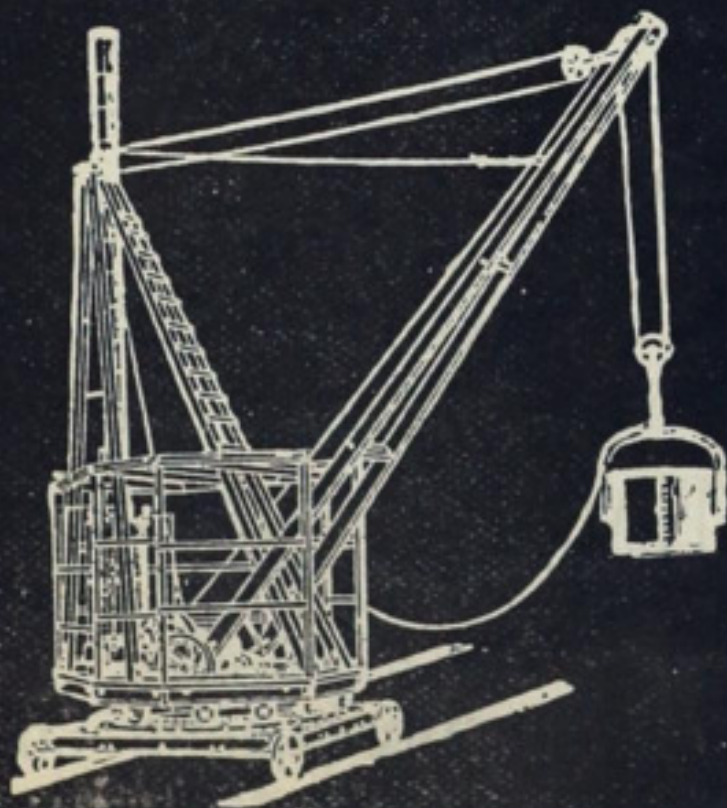
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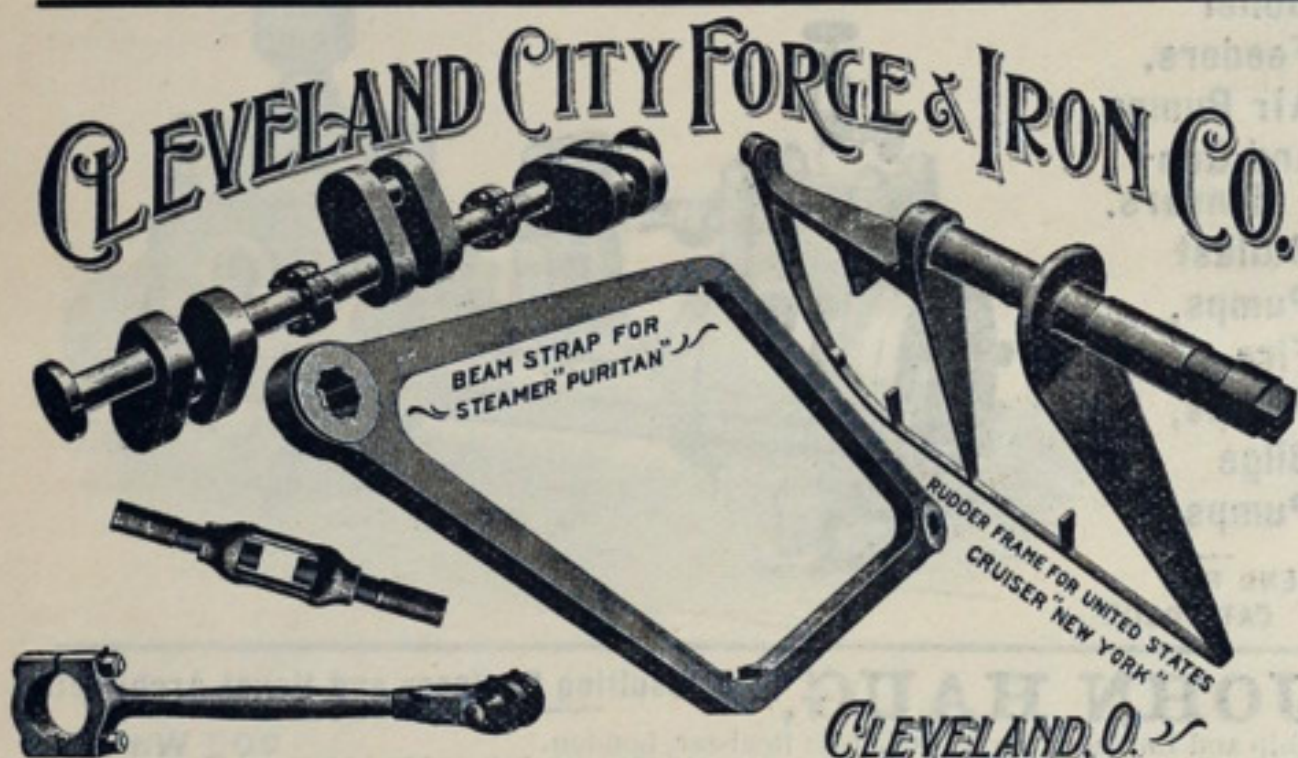
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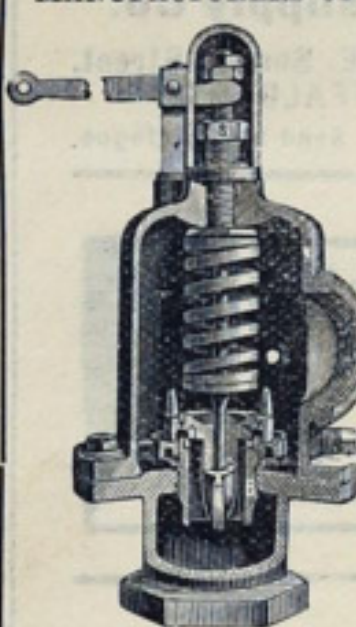
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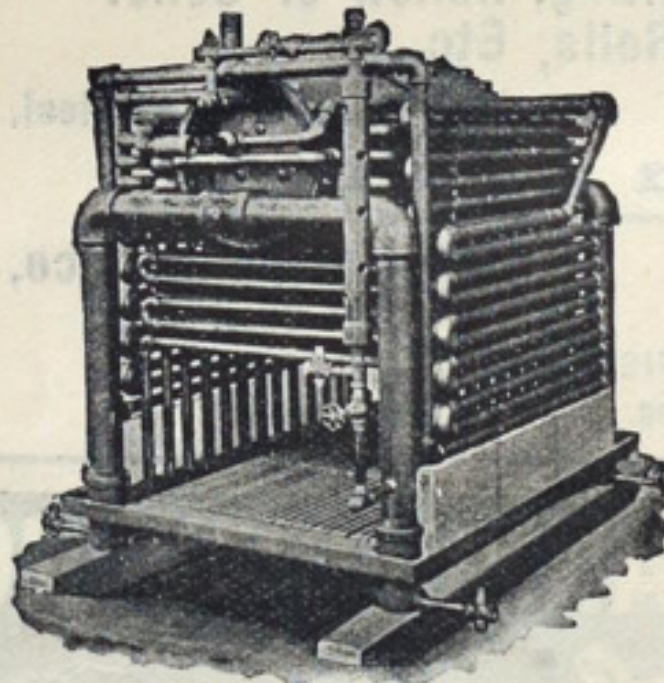
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